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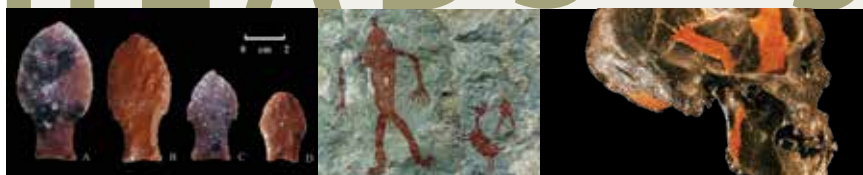
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42



HERITAGE



## Human Origin Sites and the World Heritage Convention in the Americas

### VOLUME II



United Nations  
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World  
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Convention

# Human Origin Sites and the World Heritage Convention in the Americas

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VOLUME II

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From left to right: Associated human and gomphothere bones on the bottom of Hoyo Negro, Quintana Roo, Mexico.

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# Table of Contents

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<b>A Genetic and Biological Perspective of the First Settlements of the Americas</b>	<b>1</b>	Page 5
<b>The Mitochondrial Genome and the Origin of Native Americans: Structuring Variability in South America's Initial Settlements, Moving Forward Toward Integrated Research Approaches</b> <i>Nelson J. R. Fagundes</i>	—	Page 5
<b>Molecular Approaches to Colonization and Population History in the North American Arctic</b> <i>Dennis H. O'Rourke</i>	—	Page 15
<b>Human Skeletal Evidence for the Peopling of North America: A Palaeoanthropological and Historical Perspective</b> <i>Fred H. Smith</i>	—	Page 24
<b>The Origins and Context of Palaeoamerican Cranial Morphology: Implications for Discussions about Human Dispersal into the Americas</b> <i>Mark Hubbe</i>	—	Page 39
<b>Human Dispersal and Late Quaternary Megafaunal Extinctions: the Role of the Americas in the Global Puzzle</b> <i>Fernando A. S. Fernandez</i>	—	Page 56
<b>A Conceptual Focus</b>	<b>2</b>	Page 68
<b>The Last Continent: Prehistoric America in Comparative Perspective</b> <i>Chris Scarre</i>	—	Page 68
<b>Peopling of the Americas: Potential Insights from Modelling</b> <i>James Steele</i>	—	Page 80
<b>Social Evolutionary Dynamics and Property Relations in Primitive Societies</b> <i>Antonio Gilman</i>	—	Page 87
<b>The First Settlements of the Americas</b>	<b>3</b>	Page 94
<b>The Neolithisation Process in the Americas</b> <i>Augustin F. C. Holl</i>	—	Page 94

**Methodological Approach to the Study of Early Cultural  
Developments and Adaptations in Hunter-gatherer  
Communities: A Case Study from Keatley Creek  
on the Canadian Plateau**  
*Suzanne Villeneuve*

Page 107

**Conclusions and the Way Forward**  
**Nuria Sanz**

4

Page 127

## The Last Continent: Prehistoric America in Comparative Perspective

**Chris Scarre**

*Durham University – UK*

The prehistory of the Americas was never lost to view: the shell middens, ceremonial mounds, rock art and less conspicuous traces were parts of the landscape long before Europeans arrived in the fifteenth and sixteenth centuries. The 'rediscovery' of the continent is hence a questionable concept. Yet the long separation of the Americas from the rest of the world has given it a special status in the understanding of human social development. For whereas early historians, antiquarians and archaeologists might well question whether parallels between distant ends of the Old World might not, despite their separation, be the result of direct or indirect contact, the likelihood of contact between the Old World and the Americas, while never entirely discounted, has generally been dismissed as unlikely. Thus, the development of human society in the Americas, since the first settlement of the continent in the latter part of the last Ice Age, has been an independent and indigenous process: 'from approximately 15,000 BC, when ancient peoples first entered the Americas, until roughly AD 1500, to speak in round numbers, there were two entirely separate populations on earth, one in the New World, one in the Old, each unaware of the other' (Watson, 2012).

Some earlier scholars considered the Americas a 'laboratory' for the study of evolutionary processes, because of its separate yet in many senses parallel development. This curious perspective bestows apparent primacy on the Old World and treats the Americas as a kind of test bed for anthropological theories that compare and contrast it with the former. The practice goes back to the sixteenth century, when artists such as Jacques Le Moyne de Morgues and John White produced images of ancient Picts and Britons that drew directly upon their own paintings of Native North Americans. Le Moyne had accompanied a French expedition to Florida in 1564, while John White travelled on Sir Walter Raleigh's 1585 expedition to Virginia (Moser, 1998, pp. 71-76). The idea that Native American societies were in some way equivalent to those of earlier periods in Europe was deeply judgmental but persisted into later centuries. It is exemplified for example in the opening chapter of *Ancient Society* by American anthropologist, Lewis Henry Morgan, writing in 1877:

So essentially identical are the arts, institutions and mode of life in the same status upon all the continents, that the archaic form of the principal domestic institutions of the Greeks and Romans must even now be sought in the corresponding institutions of the American aborigines, as will be shown, in the course of this volume. This fact forms a part of the accumulating evidence tending to show that the principal institutions of mankind have been developed from a few primary germs of thought; and that the course and manner of their development was predetermined, as well as restricted within narrow limits of divergence, by the natural logic of the human mind and the necessary limitations of its powers. Progress has been found to be substantially the same in kind in tribes and nations inhabiting different and even disconnected continents, while in the same status, with deviations from uniformity in particular instances produced by special causes. The argument when extended tends to establish the unity of origin of mankind. (Morgan, 1877, pp. 17-18)

Morgan's 'essential unity of mankind' was predicated upon the notion of European and American social development as essentially separate phenomena. Other European settlers maintained alternative theories of cultural contact to explain the pre-Columbian monuments that they believed were beyond the capacity of Native American peoples to create. The most famous of these was the myth of the 'Mound builders', that the large ceremonial mounds built by Hopewell and Mississippian groups in the eastern USA had been the work of a vanished pre-Indian population. It was only towards the end of the nineteenth century that this was decisively disproved (Feder, 1996, pp. 119-40).

The same period saw the rise of diffusionist theories that disregarded the possibility of independent development and argued that the prehistoric and early historic world had been linked by long-distance maritime voyages that had carried Mediterranean and Near Eastern innovations to distant lands. A key proponent was British surgeon, Sir Grafton Elliot Smith, who argued that features as diverse as artificial head deformation and the boomerang had been carried to the New World by maritime voyagers, and that knowledge of Greek art (transmitted by these same interconnections) underpinned the development of Maya art. Egyptian civilization had a primary role within this process (Smith, 1933).

The theory of connectedness has found little support in archaeological thought during the twentieth century, although it has continued to be a focus of interest (for example, Riley et al., 1971; Jones et al., 2011). Ventures such as Thor Heyerdahl's famous Kon-tiki expedition of 1947 that endeavoured to show how South American navigators could have sailed to Easter Island have not generally been found convincing. What the twentieth century has witnessed, however, is a new and improved understanding

of global patterns of prehistory. This has been the result of a dramatic increase in the amount and dispersion of archaeological fieldwork, bringing some regions into perspective for the very first time; and to the development of scientific techniques, notably in the realm of dating, that allow global chronologies to be constructed reaching far back into the prehistoric past. Thus, comparisons between the prehistory of the Americas and other regions, or between different regions within the Americas, can now be assessed in their own terms. It also means that timescales of change can be evaluated and compared.

The parallels between the prehistories of the Americas and Eurasia are well-known and striking. They include general processes such as domestication, urbanism and state formation as well as more specific features such as irrigation, metallurgy and writing. Since all the evidence (as we shall see) suggests that the two hemispheres were isolated from each other, these convergent developments must be explained in terms of common underlying features such as the response of human societies to similar environmental opportunities (the availability of particular plant and animal species, or mineral resources, coupled with climate, soils and topography). Demography is a key factor: growing population sizes in both the America and the Old World encouraged the development of novel strategies in subsistence, settlement and social organisation. Each society was of course unique: the many parallel outcomes in the two hemispheres are nonetheless remarkable.

## The first Americans

The date of first settlement of the Americas remains controversial, although the majority view envisages initial colonization some 17,000 years ago, with groups of hunter-fisher-foragers reaching the southern tip of South America by 15,000 years ago (Méndez Melgar, 2013).

The settlement of a land area of 42.5 million km<sup>2</sup> appears to have been achieved relatively rapidly by comparison with the colonization by modern humans of other parts of the habitable world. Recent research suggests, for example, the first movement of modern humans from Africa into the Arabian peninsula during Marine Isotope Stage 5, possibly before 100,000 years ago, reaching south Asia by c. 80,000 years ago, but crossing to Australia no earlier than 60,000 years ago and probably only 45,000 years ago (Boivin et al., 2013). A similar prolonged process of range expansion took modern humans to north-east Siberia and thence across the Bering Straits into North America. Alternative scenarios of a transatlantic colonization across the edge of the Arctic sea-ice have not commanded broad support (Stanford and Bradley, 2012; cf. O'Brien et al., 2014), and are inconsistent with recent aDNA analysis of the Clovis skeleton from Anzick in Montana that indicates a Siberian ancestry for the first North Americans (Rasmussen et al., 2014). The skeleton from Hoyo Negro in Mexico (c. 12,910-11,750 BP) has also been shown by aDNA analysis to represent an early population expansion out of Beringia, not an earlier migration from elsewhere in Eurasia (Chatters et al., 2014; see also Chatters, this volume).

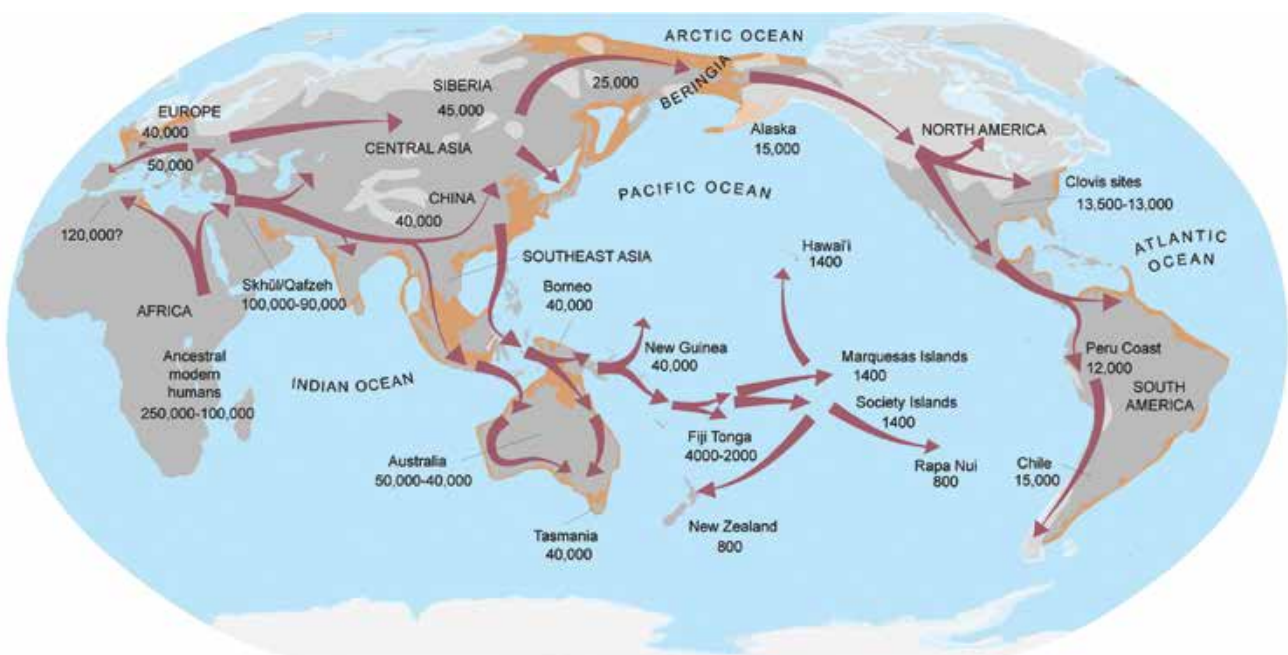


Figure 1. The expansion of anatomically modern humans from their African origins to Europe, Asia, Australasia and the Americas. The colonisation of Australasia before 40,000 years ago would have required maritime technology capable of crossing open sea; the colonisation of Polynesia within the last 2000 years required sophisticated maritime technology and navigational skill, though whether Polynesian seafarers reached the coast of South America is still uncertain. Illustrator: ML Design.



Once they had penetrated south of the Laurentide and Cordilleran ice sheets, the human settlers encountered a land of warming climate and abundant resources. In contrast to most of the areas previously colonized by modern humans (with the notable exception of Australasia) there were no established hominid communities (cf. Neanderthal in Europe and western Asia, *Homo erectus* in east Asia); in hominid terms this was pristine terrain. The rapid expansion of settlement was accompanied by the extinction of many of the larger terrestrial mammals that had populated the Americas during the Pleistocene. Recent research concludes that this megafaunal extinction may partly have been a response to climate and habitat change but it was exacerbated and perhaps largely driven by human predation (Prescott et al., 2012; Johnson et al., 2013), even though in specific cases the connection with human action may be unproven (for example, Campos et al., 2010). The fact that the pattern is repeated across several continents is strongly consistent with some measure of human responsibility, and is supported by the impact of more recent human colonization on the flightless moa of New Zealand or the elephant birds of Madagascar.

Both the Americas and Australasia might be considered 'New Worlds': the last continents settled by modern humans, long after Africa, Asia and Europe. But while together they share that distinction, their subsequent social, cultural and demographic development differ in striking respects.

In large measure this can be explained by geography and environment. Nearly 70% of the land area of Australia (3 million km<sup>2</sup>) is desert (Smith, 2013, pp. 1-6), while only limited areas of the north, west and south coasts have more than 100 days of rain per year. The tropical north of Cape York and Arnhem Land give way to subtropical and then temperate zones as one moves south along the east coast, but inland extensive areas of desert are fringed by extensive areas of grassland.

In terms of biomass, Australia is hence much smaller than the Americas than their respective land areas would suggest and pre-contact population levels were much lower. Most estimates suggest fewer than 1 million people (Williams, 2013), as compared with 53.9 million in the Americas (Denevan, 1992). Indeed, populations in the desert areas of Australia may have numbered only 60,000-100,000 (Smith, 2013, p. 10). Despite specific adaptations to plant use and management, cultivation was never adopted, even in the relatively benign and fertile regions of the east coast or the Murray-Darling drainage.

It is striking nonetheless to note the evidence for population increase in Australia and the Americas from the period of first settlement up to European contact. Johnson and Brook (2011) argue from modelling taphonomic processes and abandonment rates at rock shelter sites that Australian population size was broadly stable during the first half of the Holocene but grew significantly from 5,000 years ago up to European contact. Williams (2013) has extended the curve back into the Pleistocene and, with a larger dataset of radiocarbon dates, has largely confirmed the mid-Holocene population growth posited by Johnson and Brook, with pronounced population growth from approximately 4,000 years ago, peaking 1,600 years ago with an estimated population of 1.2 million.

Despite the relatively small population size the clustering of communities in the more habitable areas of the continent and the growing numbers of people during the later Holocene might have been expected to lead to sociocultural complexity. There were indeed innovations in technology, economy and social interaction (Hiscock, 2009). The arrival of the dog and the presence in northern Australia of wild populations of bananas, taro and greater yam, three important food plants of New Guinea, may suggest contact across the Torres Strait and limited or experimental cultivation during the later Holocene, but if so it was a practice that did not spread or become firmly established (Denham et al., 2009).

All that is in sharp contrast to the pattern of development in the Americas. A similar methodology to that employed for Australia has used changing overall frequencies of radiocarbon dates from a hypothesised colonization date of 13,000 BC to the present to construct a proxy demographic curve for prehistoric North America. This concludes that population levels grew slowly at first, increasing pace after 6,000 BC, with a still further rate of increase after 200 BC. Maximum population density was reached around AD 1150, when the North American population may have numbered some 2.5 million people (Peros et al., 2010). Other recent estimates, based on historical and archaeological sources, suggest an even higher figure of between 1.2 and 6.1 million (Milner and Chaplin, 2010). The increased rate of growth after 200 BC relates to the impact of agriculture. In the south USA, for example, where maize cultivation was introduced around 2,000 BC, the development of more productive landraces and the addition of beans, squash and turkey led to significant population increase around the middle of the first millennium BC (Kohler et al., 2008). Still higher densities of population may have been present in the tropical zone. Total population in the heavily settled Maya lowlands alone during the Late Classic period must have numbered in the millions (Demarest, 2004, p. 294).

These population estimates are far larger than those for pre-contact Australia, but modest by comparison with heavily settled regions of the Old World. The Roman Empire, for example, is estimated to have numbered between 60 and 70 million people in the first century AD (Scheidel, 2007, p. 47); and census returns from the Han Empire of China in AD 2 record over 12 million households and 57.7 million people (Twitchett and Loewe, 1986, p. 206). In the Americas, such high

densities of population may only have been encountered in Mexico, where some estimates have suggested a population of over 25 million people for the Aztec realm at the time of Spanish contact (Cook and Borah, 1948). Against such high figures, however, others have calculated that the total population of the Americas in 1492 may have numbered only 53.9 million people. This would imply that in the late fifteenth century, the Americas held only one seventh of the global human population (Denevan, 1992; Thornton, 1987, p. 37). Nevertheless it is clear that at European contact the Americas were heavily settled: perhaps more so than has sometimes been appreciated given the impact of the European diseases that preceded the first European settlers in some regions.

## First cultivation in the Americas

When the Spanish conquistadores arrived in the New World they found a land populated by farming communities. The crops were different from those grown in the Old World, and there were few of the domestic animals that made such an important contribution in Europe and Asia, but the fundamental subsistence economy that they encountered was based on the cultivation and management of plants. That was not true of the entire continent, and hunting and gathering persisted in areas unsuitable for agriculture, such as the Arctic north, but the bulk of the indigenous American population relied on farming for their food.

Agricultural origins on a global canvas have often been envisaged in terms of core areas, where the wild ancestors of important domesticated species had their origins. The number of core areas has been disputed, and the concept itself has been challenged (for example, Harlan, 1971; Piperno, 2011; Fuller, et al., 2011a). It is clear that early human foraging communities not just in 'core areas' but in many other parts of the world entered into close relationships with the plant and animal species on which they depended. Nonetheless, certain specific plants or groups of plants, sometimes accompanied by animals, assumed a considerable importance in particular regions over the long term, and provided the basis on which settled communities of larger populations could be supported.

A number of key areas can be identified in the Americas: south-western Mexico, central Pacific and western Panama, premontane Colombia, the Colombian Amazon, south-western Ecuador, and northern Peru, and eastern North America (Piperno, 2011; Smith, 2011). At the time of European contact, maize was the key staple in three of those areas, and manioc in the fourth. It is misleading, however, to focus on the origins of these staples, since the earliest cultigens appear to have been the squash *Cucurbita moschata* and the bottle gourd *Lagenaria siceraria*. Remains of both have been found at several sites in northern South America and Panama dated between 8200 and 5600 BC (Piperno, 2011). *Cucurbita* squash yields edible seeds, but it is possible that both it and the bottle gourd were cultivated largely for their use as containers. Hence agricultural origins in the Americas may have been propelled by the need of mobile hunter-gatherer communities for means of carrying things, notably water, which would have been a vital resource in this arid landscape.

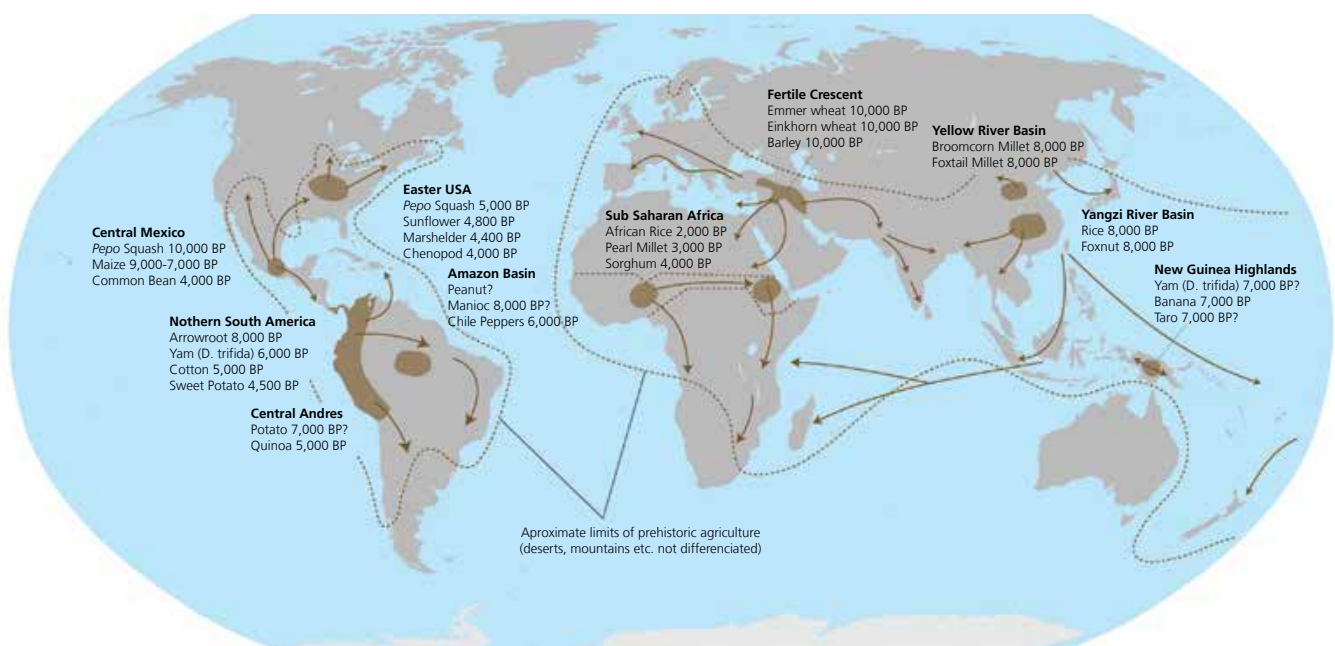


Figure 2. Principal centers of plant cultivation. Note how these are confined to tropical and middle latitudes between 20°S and 40°N, and consist predominantly of large-seeded grasses and tubers. Illustrator: ML Design.

The date of first domestication of the Mesoamerican staple crop, maize, has been much disputed. Excavation in the dry cave deposits of the Tehuacán Valley in the 1960s yielded remains of maize cobs at various stages of domestication and coupled with early C14 dates suggested that the transition from hunting and foraging to farming had been a very gradual process, extending over several thousand years. The first domestic maize, it was claimed, dated to 6,000 BC, and at first played only a minor part in the overall diet, becoming a key staple only in the third millennium BC (MacNeish, 1964).

This early field research in the Tehuacán Valley challenged the prevailing orthodoxy of Old World agricultural origins which since Gordon Childe (1936) had interpreted the beginnings of farming as a 'Neolithic revolution', a radical and relatively sudden shift in human subsistence. The focus in the Old World explanations was on the staple cereals wheat and barley (in south-west Asia) coupled with domestic livestock: sheep, goat, cattle and pig. The Tehuacán evidence poses two separate challenges to this conventional view: first, in demonstrating that the earliest cultigens were not necessarily staple food crops; and second that the path to fully farming communities was not necessarily a sudden shift.

New World farming differs from Old World farming in one other signal respect: the much smaller role accorded to domestic animals. Old World farming communities could call upon a variety of domestic animals, not only as food sources but for dairy products, transport and traction. There was nothing strictly comparable in Mesoamerica and North America, and the camelids domesticated in Andean South America were not exploited extensively for their meat, nor as plough animals, but for transport and wool. Cultivation remained the back-breaking work of human labour.

With the exception of the dog (brought across the Bering Straits by the first settlers: Thalmann et al., 2013) and the bottle gourd (carried from Africa by accidental drifting on South Atlantic Ocean currents during the late Pleistocene: Kistler et al., 2014), all the plants and animals domesticated in the pre-Columbian New World were indigenous to the Americas. The process is testimony to the inherent embeddedness of domestication within human behaviour, at least since the emergence of modern humans. It has been argued, indeed, that under the relatively stable climatic conditions of the Holocene, agriculture was, in the long run, inevitable (Richerson et al., 2001; Bettinger et al., 2009). Such a perspective places New World agriculture alongside that of the Old World regions as parallel processes, driven essentially by (a) the availability of suitable species, capable of thriving under domestication and providing high returns (such as the large seeded grasses: rice, wheat and barley, maize), and (b) demographic growth, encouraging closer interactions between societies and their wild food sources, leading eventually to domestication. Humans were conscious actors in this process, but it might also be envisaged as a form of co-evolution, with people adapting to domesticates just as domesticates adapted to human needs (Rindos, 1984).

In south-west Asia, close relationships between humans and their food sources led to an early exploitation of wild emmer wheat, barley and oats in the Levant. The key site of Ohalo II on the Sea of Galilee has evidence of the systematic exploitation of these resources 23,000 years ago (Nadel et al., 2012). This preceded by over 10,000 years the transition to agriculture. That may be contrasted with the process of subsistence change in the Americas. The settlement history of the Americas was much shorter than that of the Near East. If we assume first colonization of the continent no earlier than 17,000 years ago, and relatively rapid expansion of human communities implied by the available dating evidence from South America, then the period for adjustment of human societies to the regional suites of plant and animal resources had a much later start.

Once again, however, the advent of stable and more benign climatic conditions at the advent of the Holocene appears to have a major role. In South America, a range of Neotropical plant species appear to have been domesticated at the very beginning of the Holocene in Colombia, Ecuador and Peru. In the millennia that followed, human manipulation of gourd, arrowroot, manioc, yam and perhaps maize led to their domestication in this same region. In the Andean zone, there is evidence for the adoption of cultigens in certain upland valleys in the terminal Pleistocene and intensified use in the early to middle Holocene (Dillehay, 2012, p. 43). Yet the impact on communities of these increasingly intertwined plant-human relations appears to have been more gradual than in key regions of the Old World. In the Levant, the size of the largest settlements expanded massively during the early and middle Holocene, from 0.2 hectares in the tenth millennium BC (Late Natufian) to over 10 hectares in the seventh millennium BC (Late PPNB) (Kuijt, 2000). The large settlement of Çatalhöyük in central southern Turkey, founded c. 7100 BC, covered 13 hectares. Within a millennium, furthermore, substantial farming settlements had been established in south-eastern Europe, and by the end of the sixth millennium settlements of large timber longhouses had spread along the river valleys of central Europe to reach the shores of the English Channel. In China, too, the first domesticates quickly became established in the context of large nucleated villages in river valleys. That was not the case in the American Neotropics (Piperno, 2011, S461).

The contrast between the Americas and western Eurasia raises a series of fundamental questions. Why were they so different? One important feature that stands out is the focus in the latter region on the systematic gathering of large-seeded wild grasses – the ancestors of the domestic cereals – for several thousand years. These provided an effective staple foodstuff that could support large sedentary populations, in combination with pulses and domestic livestock. Many of the early New World

cultigens did not have the potential to serve as staples in this way. But others clearly did – notably maize, manioc and potato, and it was those ultimately that provided the means for sociocultural complexity and the development of urban state societies in Andean and Pacific South America, in highland and lowland Mesoamerica and in the Mississippi Valley.

## Settling the land

As human populations grew in numbers during the Postglacial, human impact on the landscape also increased. This was witnessed in growing levels of deforestation, both in the Americas and Eurasia. Much of that was associated with the clearance of land for agriculture, although hunter-gatherer impacts through burning to encourage new growth may have had unintended and irreversible effects in some areas. In coastal California, for example, the establishment of more sedentary communities of hunter-fisher-gatherers around 1500 BC was associated with increased burning of the local vegetation (Anderson et al., 2013). A general relationship between population size and forest clearance for farming has been documented at both the continental and global scale, and may have contributed to slowly rising levels of atmospheric CO<sub>2</sub> recorded in the Atlantic ice cores (Kaplan et al., 2011).

Human impact was also marked in more symbolic ways. The most widespread took the form of rock art. Palaeolithic rock art (in the form of engraved or painted motifs) is present on every settled continent, including Australia. Evidence from North America suggests that petroglyphs were being carved at Winnemucca Lake, Nevada, as early as 10,000 years ago (Benson et al., 2013). Of similar or slightly earlier age is an engraved anthropomorphic motif from the Lapo do Santo rockshelter in central Brazil (Neves et al., 2012). It is not only the practice of rock painting or carving, but the motifs themselves that find broad international resonance. Images of humans and animals, whether naturalistic or schematic, are widespread on all continents. Still more striking are the middle Holocene hand stencils, present for example at the Cueva de las Manos in Patagonia, inscribed on the World Heritage List in 1999. Hand stencils are also known from North America, North Africa, Australia and Borneo, and from Upper Palaeolithic caves in France and northern Spain, where they constitute some of the earliest dated rock art in the world (Pike et al., 2012; Pettitt et al., 2014). Recent studies of hand stencils in Sulawesi have shown they are of comparable antiquity to the oldest European examples (Aubert et al., 2014). Both the practice of rock art and the individual motifs place the Americas once again within a global context of human behaviour, in this case one where symbolic expression, and the marking of special places within the landscape, occasionally takes very similar forms.

Postglacial societies modified their landscapes in other ways, too. Monuments of earth and stone are a feature of many regions within and outside the Americas. The manipulation of large stones to create pillars, colossal statues or burial chambers (frequently in the form of 'megalithic' monuments) draws upon the need to impress, as power relations became more complex and societies more unequal. Monuments also provided the settings for ceremonial and cult. At Nanchoc in the Andes, platform mounds were built as early as the sixth millennium BC, with steep stone-faced sides (Moseley and Heckenberger, 2013, p. 646). They mark the beginning of a tradition that became widespread in the 3rd millennium BC, as represented by sites such as Aspero on the Pacific coast or La Galgada in the interior. Watson Brake in the Mississippi Valley, a fourth millennium complex consisting of eleven mounds around an oval plaza, provides a North American parallel (Saunders et al., 2005). They invite comparison with west European ceremonial structures of comparable date such as Silbury Hill or Avebury, but such comparisons fail at the detailed level, in terms of form and function. It is the creation of ceremonial settings at monumental scale that is the connecting characteristic.

As communities grew in size and complexity other parallels arose between American and Old World societies. The construction of irrigation canals to bring water to crops, or to natural stands of vegetation (Smith, 2001) is a feature of both hemispheres from at least the sixth millennium BC, although the most elaborate irrigation systems belong to more recent periods. It was only state-level societies that could command the skill and resources to construct such extensive irrigation works as the Nahrwan canal in sixth century AD Mesopotamia (Adams, 2006) or the inter-valley Andean canal systems of the Chimú (Ortloff, 1995). Control of water was a feature of many early and historical societies and once again, there are striking parallels between distant lands and places. The same extends to terracing of mountainous landscapes to create cultivable fields, a feature of Mesoamerica and Andean South America at the time of European contact, as well as in many parts of Asia and southern Europe.

Intensification, in terms of population numbers, settlement density, social inequality and food production, led ultimately to urbanism and state formation in both hemispheres, through a series of separate but parallel processes. The global chronological patterning is very uneven, with the first cities in Mesopotamia during the fourth millennium BC, in the Indus Valley region of South Asia a millennium later and in northern China by the end of the second millennium BC. They are marked by monumental structures, pronounced social hierarchies represented in iconography and burial, and intensified food production. In the Americas, cities form during the late first millennium BC and AD in highland Mesoamerica

(Teotihuacán and Monte Albán) and in the early first millennium in the Maya lowlands. Once again there are striking interregional parallels, between, for example, the low intensity tropical urbanism of the Maya lowlands and the Angkor complex in South-East Asia, or Anuradhapura in Sri Lanka (Isendahl and Smith, 2013; Fletcher, 2012). By the time of European contact, sophisticated urban societies were present, as independent developments, in highland and lowland Mesoamerica and Andean and Pacific South America, just as throughout much of Eurasia and North Africa. Millennia of demographic growth, subsistence change and social inequality had produced a global pattern whose common origin lies in the first settlement of the Americas during the final stages of the last Ice Age, and little or nothing to subsequent contacts.

## The New World in isolation: maritime contact before Columbus

In the context of global prehistory, the Americas present a paradox of early connection followed by later apparent isolation. Modern humans arrived in North America around 15,000 years ago, if not before. There may have been as many as three separate immigrations, probably crossing the Beringian land-bridge from Siberia into Alaska (Greenberg et al., 1986). The alternative, of coastal or maritime migration using boats, opens the alternative possibility of colonization from Europe across the southern edge of the Arctic sea-ice (Stanford and Bradley, 2012), although as we have seen, a north-western point of entry is still generally preferred.

Whichever the point of arrival, the general belief backed by overwhelming evidence (or more accurately absence of evidence) is that the Americas, once settled, were thereafter isolated for over 10,000 years. It is that isolation that gives the parallel nature of many social, cultural and economic developments in Eurasia and the Americas its special significance. Cities, agriculture, metallurgy and writing are among the many key developments that find parallels in both hemispheres, suggesting that in a certain perspective human societies may be considered self-organising systems, tending to find the same solutions, technologies or traditions when faced with similar circumstances and opportunities.

There are, nonetheless, tantalising hints of external connections between the Americas and the Old World over the lengthy period from first settlement to the Spanish conquest. As we saw earlier, domestic dogs were probably brought from Asia by the first settlers, even though the earliest evidence of their presence in the New World is several years later than the presumed period of colonization.

Two specific pieces of archaeological evidence suggest later contact, although they may have been of a relatively ephemeral nature. The first of these is the sweet potato *Ipomoea batatas*. Sweet potato is a domestic plant of tropical America origin, yet it appears in archaeological contexts on a number of Polynesian islands several centuries before European contact (Horrocks and Rechtman, 2009; Montenegro et al., 2008). Recent genetic analysis confirms their pre-Columbian dispersal from the Americas to Polynesia (Roullier et al., 2013). How this came about has been the subject of considerable controversy. The maritime capabilities of Polynesia seafarers are well-established. The settlement of Rapa Nui (Easter Island) involved an open sea crossing of over 2,000 km, its nearest inhabited neighbour being Pitcairn Island, 2250 km to the north-west. Beyond Rapa Nui, the coast of South America lies 3747 km distant (Bahn and Flenley, 1992, p. 22). The possibility that Polynesian voyagers reached South America, whether by accident or design, is entirely plausible. The presence of sweet potato in Polynesia, however, indicates not only landfall in South America but a successful return journey. Westward flowing currents from Guayaquil in Ecuador would have made that possible, if nonetheless challenging (Scaglione, 2005; Scaglione and Cordero, 2011). Other evidence for Polynesian contact has been proposed (Jones et al., 2011), although sweet potato remains the most convincing.

The alternative scenario, that South American coastal peoples themselves undertook maritime voyages in the Pacific, was championed by Thor Heyerdahl in his 1947 Kon-tiki expedition. However, although ceramics found on the Galapagos islands, 926 km from the coast of Ecuador, may indicate maritime contact with South America, earlier claims for their pre-Columbian age have been discounted (Flett and Haberle, 2008; Froyd et al., 2010). There is no other evidence of distant South American seafaring, in contrast to the extensive record of Polynesian voyaging. Alleged parallels between monumental architecture in Polynesia and South America are imprecise and unconvincing, and testify merely to independent regional manifestations of a globally dispersed pattern of ceremonial platforms and standing stones. Accidental drift voyaging from South America to Polynesia remains nonetheless a possibility (Montenegro et al., 2008).

The second is the presence of wheeled toys in Pre-Columbian Mesoamerica. Several terracotta models of wheeled vehicles, with disc-like wheels mounted on wooden axles supporting a terracotta frame sometimes in the form of an animal, have been found mainly in Olmec contexts in the coastal Veracruz region (Ekholm, 1946). It has been suggested that these are evidence of trans-Atlantic contact, perhaps involuntary and spasmodic (e.g., shipwrecked mariners). While that possibility cannot be excluded, an indigenous derivation from spindle whorls offers a more plausible origin (Ekholm, 1946, p. 225).



The absence of any South American domesticates other than sweet potato from Polynesia suggests that such contact as may have existed were ephemeral. Nor is the evidence any stronger for Central or North America. This stands in stark contrast to the movements of crops between different regions of the Old World during the middle and late Holocene. There was active transmission across the Indian Ocean, with Chinese millet reaching Africa, and no fewer than five African crops reaching India soon after 2000 BC (Fuller et al., 2011b). Even the relative isolation of Australia was broken by the introduction of the dingo some 4500 years ago, and already noted, domestic crops may briefly have been introduced from New Guinea to Arnhem Land two millennia or more before European contact (Hiscock, 2009, p. 146; Denham et al., 2009). Given the relatively short sea crossings separating north-east and north-west North America from Europe and Asia respectively, its sustained isolation is all the more remarkable.

The first documented external contact can be dated to around AD 1000 and offers a foretaste of things to come. The Norse (Viking) settlement found at L'Anse aux Meadows on Newfoundland consists of a group of Icelandic-style halls radiocarbon dated to the period AD 980-1020. It is identified as a short-lived exploratory base established by Leif Eriksson in around the year AD 1000 and documented in the later Vinland Sagas. The attempted colony (if such it was) failed, however, owing to the hostility of the local populations and the sheer distance (3200 km) from the small Viking settlements of Greenland (Wallace, 2000). A scatter of Norse artefacts among the Dorset peoples of Arctic Canada testifies to only limited contact between the Greenland Vikings and indigenous North Americas in the two or three centuries that followed (Sutherland, 2000).

Hence by the beginning of the second millennium AD, the isolation of the Americas was under threat from two directions: the Polynesian maritime expansion from island South-East Asia to the west, and the Viking maritime expansion from north-west Europe to the east. The latter succeeded in making landfall, for at least a few short years; the former may also have done so but left no definite trace. In neither case were there long-term impacts. Neither Vikings nor Polynesians reached the Americas in sufficient numbers to pass on the deadly Old World diseases that ravaged indigenous populations following the Spanish conquests of the sixteenth century.

## Epilogue: European conquest and colonialism

The arrival of Spanish and other European adventurers and colonists brutally truncated the indigenous development of Native American societies that had been unfolding since the first settlers crossed the Bering Straits some 15,000 or more years before. In the centuries that followed European contact, warfare, displacement, maltreatment and disease reduced the indigenous population to perhaps 10% or on one estimate as little as 6%, of its original size (Thornton, 1987, p. 42). That cultural dislocation has coloured the subsequent investigation of pre-Columbian societies, as scholars and antiquarians in the western tradition have sought to apply the methods of archaeology to an understanding of American prehistory. European collections of Aztec and Maya antiquities began to be formed during the nineteenth century, but these could not be incorporated into the narrative of the rise of western civilization in the same way as those of Greece and Rome, or Mesopotamia and Egypt (Díaz-Andreu, 2007, p. 172). It was only in the middle decades of the twentieth century that accounts of world prehistory began to be developed in which the early societies of the Americas were accorded a proper and more appropriate standing in the global picture of the human past.

Many of the features of those early societies are widely represented in the Americas and beyond, as we have seen. The underlying trend, of human population increase and adjustment to resources, environments and opportunities, has produced striking parallels which in some respects take us back to Lewis Henry Morgan's 'unity of the origin of mankind' (Morgan, 1877, p. 18). In World Heritage perspective, they have intrinsic value as reminders of the complex patterns of the past that preceded European expansion.

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